Using Animal-borne Video and Data Recorders to Study the Foraging Behavior of Weddell Seals

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Purpose: Animal-borne video and data recorders provide a digital record of predation events, locomotory performance, three-dimensional movements and environmental variables that improve our understanding of the foraging behavior and habitat associations of deep diving Weddell seals

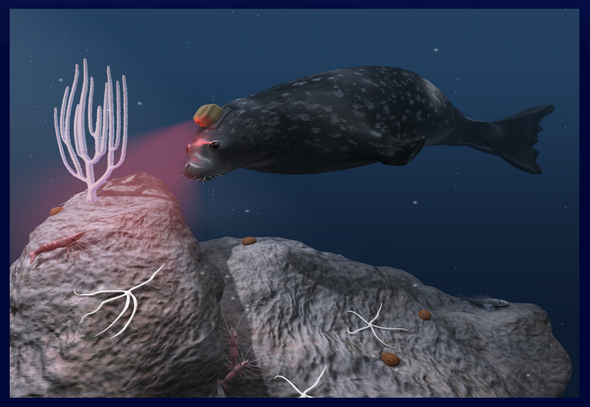
Instrument Description

1. Pressure rated to 1,000 m
2. Wide angle, low light CCD camera with near-infrared LED light source
3. 80 GB of memory
4. Fast acquisition Global Positioning System (GPS)
5. High resolution analog-to-digital converters
6. Real-time clock
7. Pressure transducer
8. Conductivity sensor
9. Temperature thermistor
10. Dissolved oxygen sensor
11. Light sensor
12. Speed sensors
13. 3-axis magnetometer and accelerometer for heading
14. Hydrophone (50 Hz to 16 kHz)
15. Radio controlled remote release

Instrument design and fabrication by W.H. Hagey, Pisces Design
Artwork by W. Monteleone

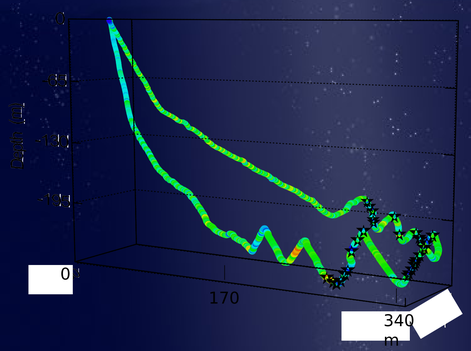
Near-infrared Light Source

Recording at depth is enabled with six near-infrared (850 nm) LEDs that produce light that is not visible to marine vertebrates.



Three-dimensional Dive Path

Foraging dive path of a Weddell seal capturing Antarctic silverfish (stars). The path is color coded for swim speed.



A Seal's Eye Perspective

Weddell seal capturing a bald notothen (A) and Antarctic silverfish (B)